

WHAT IS CLAIMED IS:

1. A semiconductor laser excitation solid state apparatus comprising:
a solid state laser element containing an active medium ;
a semiconductor laser for optically exciting said solid state laser element;
a power supply for supplying electric power to said semiconductor laser; and
an optical resonator for taking out a laser beam from said optically excited solid state laser element;
wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is changed within one pulse.
- 2 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is decreased successively within one pulse.
- 3 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is decreased successively in an initial stage of a pulse within one pulse.
- 4 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is increased successively within one pulse.

5 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is increased successively in an initial stage of a pulse within one pulse.

6 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein when said semiconductor laser is pulse-operated to pulse-excite said solid state laser element, current supplied to said solid state laser element is changed stepwise within one pulse.

7 The semiconductor laser excitation solid state laser apparatus according to claim 1, further comprising:

a diffusive reflector arranged to enclose said solid state laser element and having an inner surface constructed to diffuse and reflect laser beam; and

an optical waveguide element for guiding the laser beam emitted from said semiconductor laser into the interior of said diffusive reflector while repeating total reflections of the laser beam.

8 The semiconductor laser excitation solid state laser apparatus according to claim 1, wherein said solid state laser element has a rectangle cross section and is arranged on a cooling plate.